ENVIRONMENTAL MITIGATION FOR SITE REDEVELOPMENT:

MITIGATION TOOLS AND CASE STUDY APPLICATIONS

Managing Environmental Risk for Property Redevelopment Workshop
Kansas Department of Health & Environment

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Presented by:

Brian M. Conrad
Senior Scientist / Site Redevelopment
GSI Engineering

REDEVELOPMENT OF CONTAMINATED PROPERTY

Previously characterized as "high risk" ventures taken on by very experienced commercial developers or development teams with deep pockets:

- Navigate complex regulatory environment
- Traditional environmental cleanup costly and very slow
- No "hard" tools to address liability or other uncertainties
- CERCLA-driven horror stories

Regulatory framework has evolved to support redevelopment & construction (2002 Brownfields Act)

- Regulatory community now considers economic shortfalls in addition to risk
- EPA and State Brownfields Programs / Brownfields Revitalization Act
- State Voluntary Cleanup Programs
- Well Established Environmental Trust Funds
- Environment Use Control Programs
- Local redevelopment and tax incentives
- Contaminated Property Redevelopment Act

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COMMERCIAL DUE DILIGENCE

Commercial products have also evolved:

- Environmental assessment has been standardized within regulatory framework
- ASTM Phase I / Phase II Environmental Site Assessment
- Standard practice, affordable and accelerated under typical conditions
- State oversight and municipal sponsorship of low-risk properties
- Risk-Based Corrective Action has progressed to become usable within development timelines
- Insurance products are becoming understood

Most Importantly – Effective recycling of land & infrastructure is paramount in most communities:

- Green space is limited
- Initiatives to control urban sprawl & carbon footprint
- Socio-economic priority on urban renewal

All of the above leads towards more encounters with potentially contaminated property and the need for viable tools to better manage liability and risk

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ENVIRONMENTAL MITIGATION PROCESS

Site Assessment (due diligence):

- ASTM Phase I / Phase II Environmental Site Assessment
- Characterization of environmental impacts and risk
- Evaluation of cleanup & site development alternatives
- Incorporate “alternatives” into design plans
- Pursue liability protections

Mitigation Design:

- Environmental impacts ≠ Hazardous Waste Cleanup
- Institutional or administrative controls
- Engineering controls to incorporate with construction
- Construction alternative studies (parking, buffers, etc.)
- Removal or installation of working systems as a last defense
- New liability protections allow prospective purchasers to incorporate appropriate measures without taking on the added liability or responsibility of environmental remediation

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Mitigation Controls: Local Examples & Practice

Mitigation of Heavy Metals in Soil

Common Soil Contaminants

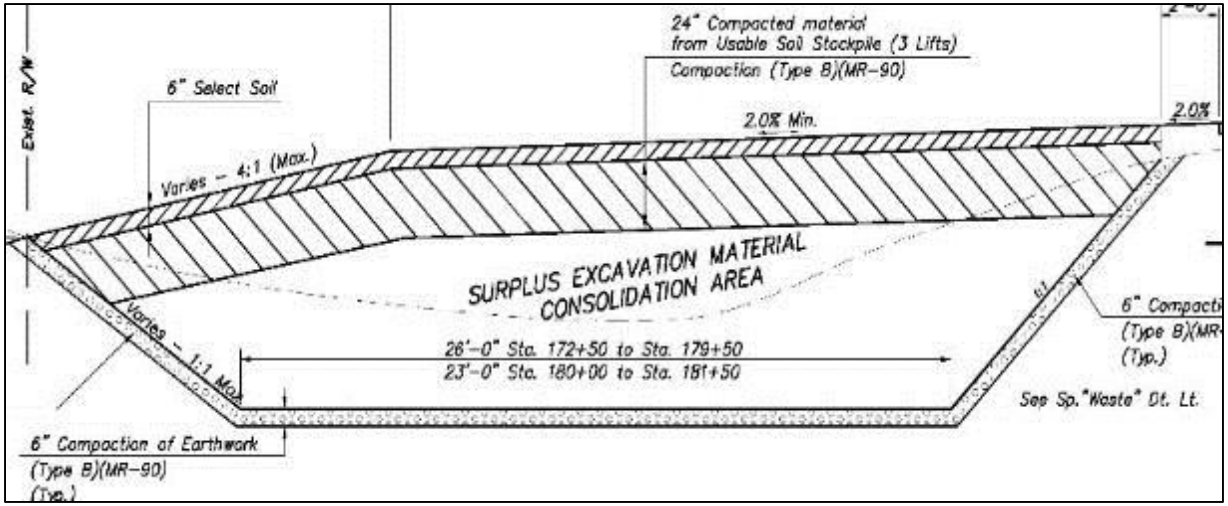
Not Mobile

Engineering Controls & Soil Stabilization

Common to previously developed land – heavy metal deposition is often addressed by stabilization or other management on site. Liability protections allow prospective purchaser or developers to incorporate into design without added risk.

Metals conditions are not a deal breaker. Various technologies and construction methods are well established:

- **Controlled fills and vegetative cover**
- **Consolidation, Encapsulation or "Capping"**
- **Neutralization / Stabilization**



RESIDENTIAL & GREEN SPACE MITIGATION

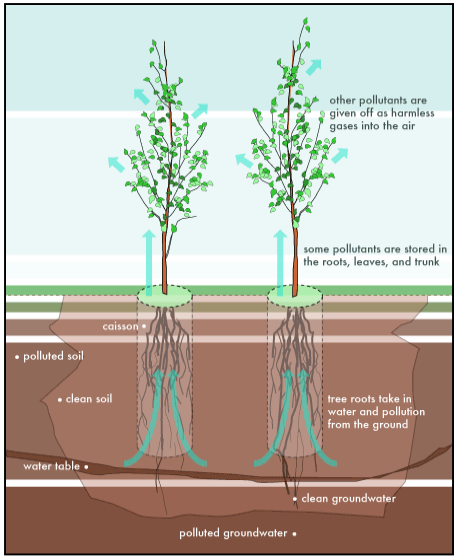
Kansas City, KS Urban Renewal

Total investment ~$30K

Elevated lead in soil

Landscaping and raised beds used as a barrier between residual lead and surface

Blighted and nuisance conditions addressed with no added environmental risk



COMMERCIAL & INDUSTIRAL SITE MITIGATION

Southeast & South-Central, KS

Smelting/mining impacts & rail bed restoration

Commercial redevelopment

Consolidation & capping

Soil stabilization using common construction materials

Mitigation & Engineering Controls for Building Construction

Statewide Applications:

- Indoor Air Quality
- Vapor Intrusion
- Volatile Contaminants
- Hydraulic Containment

The cost and interference of mitigation controls can be significantly offset when incorporated into the overall design. Fairly routine construction measures are often effective in the management of risk:

Low permeability barriers

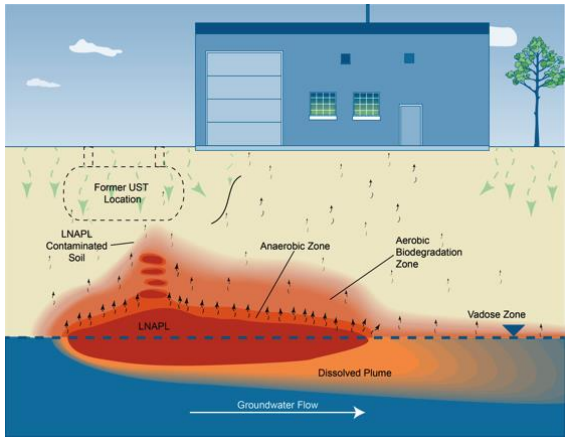
Surface cover, stabilization, landscaping controls & green space

Soil vapor & passive venting

Parking design & site layout

Trench containment & interceptors

Foundation and other structural controls



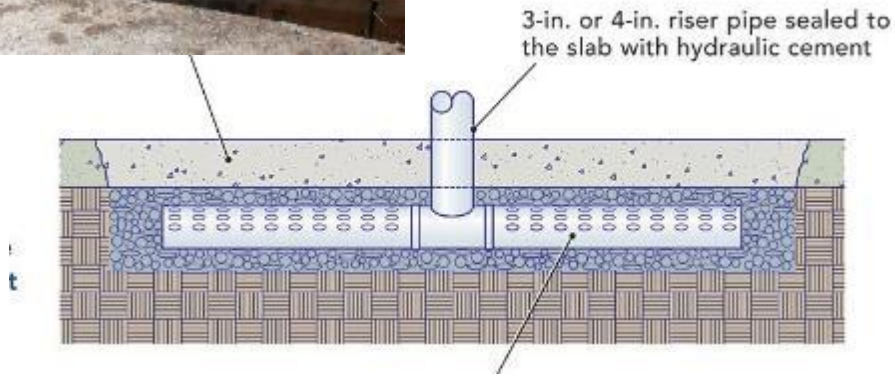
BARRIERS & FOUNDATION CONTROLS

Volatile contaminants

Low-Permeability barriers during construction

Passive ventilation

Incorporate with utility and/or foundation design



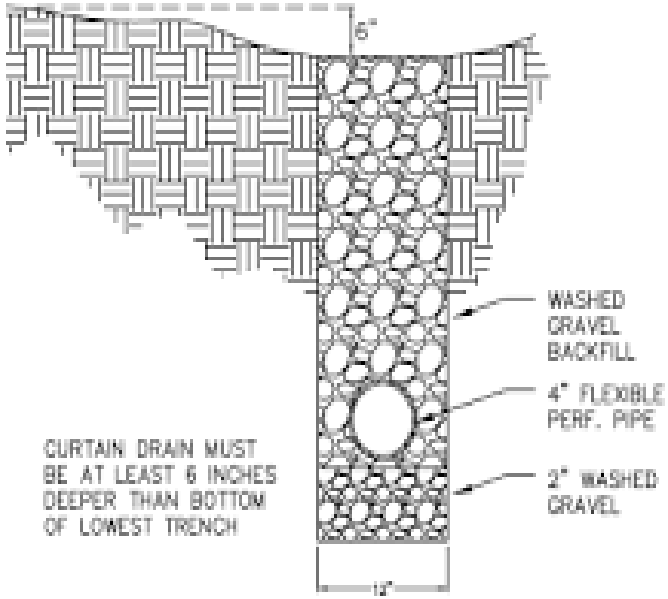
HYDRAULIC CONTROLS

Surface water or groundwater contaminants

Hydraulic controls incorporated with utility installations, Dewatering [sumps] and/or storm water management

Passive diversion or containment of affected waters

Procedures are not uncommon to civil engineering practice



Administrative Controls

Paper behind the deign

Liability protections

Define Regulatory Purview

Engineering controls or passive design are usually supported by institutional or administrative controls to manage risk:

Land Use Restrictions

Environmental Use Controls (EUCs)

No Further Action Letter

Prospective Purchaser Agreements

Construction Standards

Soil Management Plans

Redevelopment Case Studies

American Legion Golf Course

El Dorado, KS

Located in a historic oilfield (Circa 1910's)

Redeveloped into a Golf Course from 1937 to 2010

Again redeveloped in 2011 into the present BG Products Veterans Sports Complex

COMPLEX PHYSICAL & ENVIRONMENTAL CONDITIONS

Historical oilfield and refinery practices

Sinkholes provided ready conduits of hydrocarbons

Crude oil was used to “groom” the golf course
Constant Creek is a close receiving surface water

A skimming structure was used to recover crude oil during heavy precipitation events

RISK MANAGEMENT TOOLS

1977: Crude oil skimmer installed to quantify amounts of oil

2009: Phase I / Phase II Brownfields BTA

2011: Ground Penetrating Radar was used to locate abandon oil wells

2011: Phase III Brownfield BTA

2012: Environmental Use Controls (EUCs) recorded to manage risk through restricted construction and land use

Significant environmental conditions addressed through detailed site characterization and land use design specific to known (but generally non-point) environmental impacts

Applied to promote further redevelopment as Butler County athletic complex

City of Derby Public Works

Derby, KS

HISTORICAL USE & ENVIRONMENTALCONCERNS

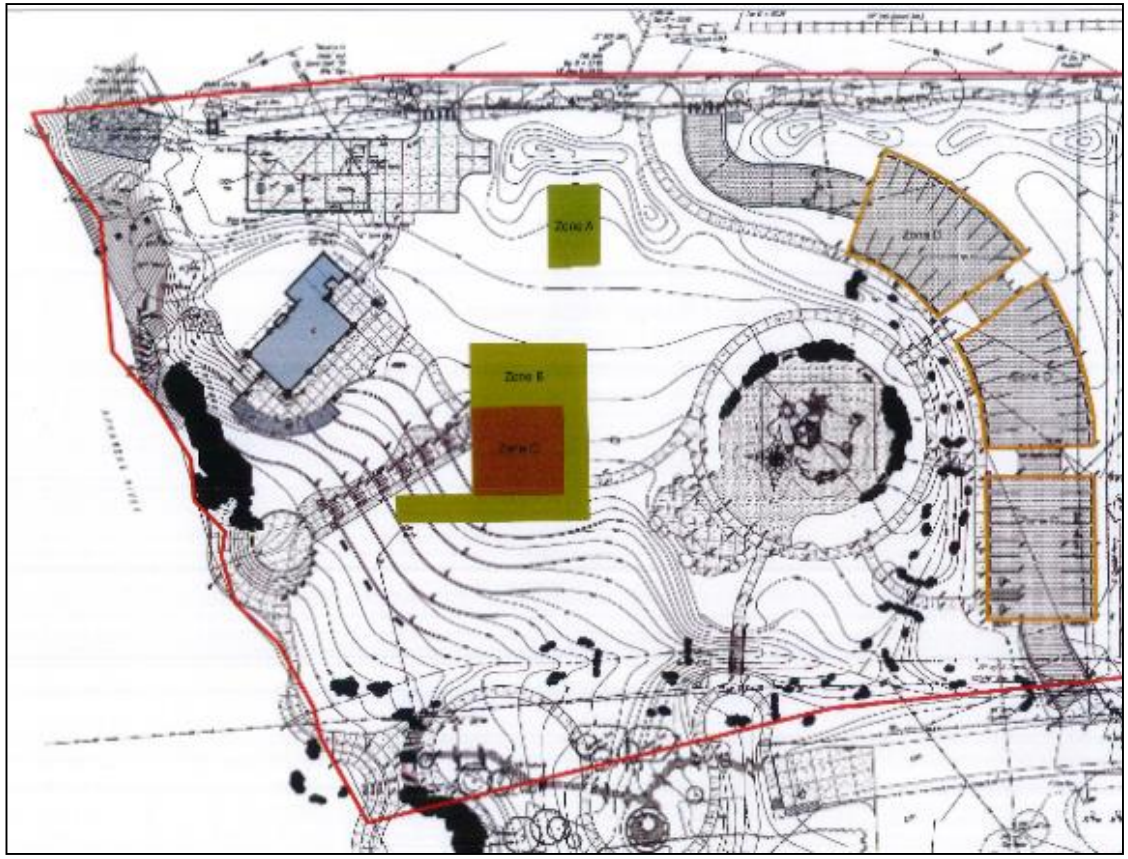
- Waste water treatment plant in the 1950's
- Firearms range
- Public works yard from 1970's to 2010
- Site adjoining the Arkansas River
- Surrounding industrial use including a concrete plant

CREATIVE SOLUTIONS

Chloride impacted soil consolidated then encapsulated under a new parking lot within the city park. Long-term management by EUC.

VOC's, lead and inorganics in groundwater were fully delineated and at levels not posing a threat based on risk-based characterization

Brownfields, VCP & EUC Program tools



Riverfront Revitalization

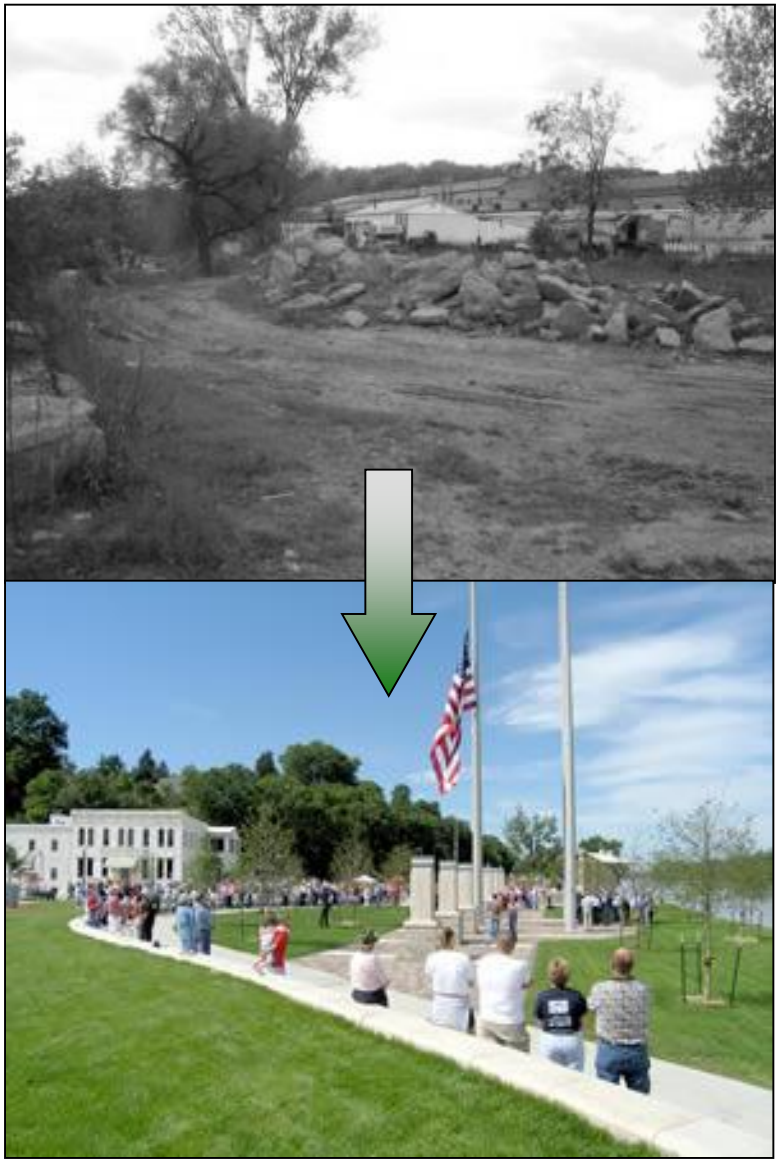
City of Atchison, Kansas

KDHE Brownfields Targeted Assessments: >$50K
BTA funding used to initiate Environmental Site Assessment

EPA Brownfields Assessment Grant: $200K

Total Funds Leveraged: >$4.1 Million

2008 Region 7 Brownfields Achievement Award



Abandoned Sand Pit

Near Wichita, KS

Proposed residential housing project

Project stalled because the supporting program and liability protections were not in place

SIGNIFICANT INVESTMENT FOR PURCHASE

Extensive planning and expense to address:

- **Architectural**
- **Geotechnical**
- **Solid Waste Removal/Salvage**
- **Purchase negotiations and legal**

Environmental Assessments:

- **Phase I / Phase II**
- **Surface water assessment**
- **Inventory & characterize chemical waste**

DUE DILIGENCE FINDINGS

Closed Superfund site

Former sand and gravel mining operation

Waste inventory estimated approximately 2,000 55-gallon drums of paint material

Hazardous wastes, solvents, paints & resins

Extensive backfilling of concrete rubble and debris

<u>COMMON SCENARIO:</u>

CHEMICAL CHARACTERIZATION BELOW KDHE RISK BASED CLEANUP STANDARDS

(high volume soil, water & container testing)

BUT LIABILITY CONCERNS REMAIN…

Developer / Prospective Purchaser Concerns:

- **A stigma of being a historical Superfund Site**
- **Unknown liability of finding impacts after ground breaks**
- **No true mechanism to maintain liability protections or control potentially escalating legal costs**

CONTAMINATED PROPERTY REDEVELOPMENT ACT:

- **Formally address pending liability concerns & regulatory uncertainties (largely cleanup liability to purchaser/developer)**
- **Provide the regulatory tools necessary to keep the project moving forward**

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MITIGATION PLANNING AND OUTREACH

Due diligence as a planning tool:

<u>Environmental</u> mitigation process requires group planning & participation early in the process

- Local governments
- Prospective Purchasers
- Tenants
- Lenders
- Legal Community
- Design Engineers / Architects
- Contractors

GSI ENGINEERING Site Redevelopment Team Contact Information:

BRIAN Conrad

Senior Scientist / Office Manager

GSI Engineering, LLC

Lenexa, Kansas

913.495.2360

bconrad@gsinetwork.com